FORM PTO-1390 (Modified) (REV 11-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)
A34526-PCT USA	09/913744

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP99/08555	08 November 1999	09 November 1998

TITLE OF INVENTION
RUNNING TREAD FOR TIRE AND TIRE COMPRISING THE SAME

APPLICANT(S) FOR DO/EO/US
POULBOT, Valery

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include itens (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☒ is attached hereto (required only if not communicated by the International Bureau).
   b. ☐ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☐ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Form PCT/RO/101; Form PCT/IPEA/408; Response to Written Opinion; Form PCT/IB/304; Form IB/338; a Petition to Revive Abandoned Application Pursuant to 37 C.F.R. Section 1.137 (b); a postcard; and a check in the amount of $1,130.
Express Mail No.: EK839853032US
Date of Deposit: 16 August 2001

JC03 Rec'd PCT/PTO 16 AUG 2001

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
09/913744	PCT/EP99/08555	A34526-PCT USA

24. The following fees are submitted:.		CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :			
☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO	**$1000.00**		
☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	**$860.00**		
☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO	**$710.00**		
☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)	**$690.00**		
☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)	**$100.00**		
ENTER APPROPRIATE BASIC FEE AMOUNT =		**$860.00**	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).		**$0.00**	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	13 - 20 =	0	x $18.00	**$0.00**	
Independent claims	1 - 3 =	0	x $80.00	**$0.00**	
Multiple Dependent Claims **(check if applicable)**.			☒	**$270.00**	
TOTAL OF ABOVE CALCULATIONS =				**$1,130.00**	
☐ Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				**$0.00**	
SUBTOTAL =				**$1,130.00**	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +				**$0.00**	
TOTAL NATIONAL FEE =				**$1,130.00**	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).** ☐				**$0.00**	
TOTAL FEES ENCLOSED =				**$1,130.00**	
				Amount to be: refunded	$
				charged	$

a. ☒ A check in the amount of **$1,130.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **02-4377** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

John D. Murnane
BAKER BOTTS LLP
30 Rockefeller Plaza
New York, NY 10112-0228
US

Janet M. MacLeod
SIGNATURE

Janet M. MacLeod
NAME

35,263
REGISTRATION NUMBER

16 August 2001
DATE

TIRE TREAD AND TIRE CONTAINING SAME

The present invention concerns a tire tread and a tire containing same.

The invention applies, notably, to the proper operation of the electronic devices loaded on a vehicle equipped with such tires and, in particular, on a passenger vehicle. Thus, the invention applies, for example, to the quality of radio wave reception from a radio set provided inside such a vehicle and/or to the reliability of an electronic device provided inside a tire equipping that vehicle.

It is known that the tires of a vehicle are charged and discharged by triboelectric effect on running and that the corresponding charge and discharge sometimes interfere via electromagnetic disturbances, under certain weather conditions, with the electronics loaded on the vehicle, for example, with a radio set installed in the vehicle, particularly when said set is used in amplitude modulation.

What notably occurs, on passing from a first running section to a following second section with physical characteristics different from those of said first section, such as a different electric conductivity and/or structure and/or relief, is a sudden discharge by the tread of each tire of the charge accumulated on said first section.

Such successive running sections can, for example, consist respectively of an electrically insulating material such as asphalt and of an electrically conductive material, such as those used for metal joints of a bridge, for manhole covers or for railroad rails.

It is also known that those sudden discharges and the electromagnetic disturbances that can result therefrom are all the more marked as the tread material is notably more electrically insulating, upon passage from the first actual running section to the second actual section.

Now, it so happens that many current tires are characterized by a high content of non-electrically conductive reinforcing filler, such as silica, with the intended advantageous effect of reducing hysteresis losses during travel and, consequently, the rolling resistance of the tires, so that the fuel consumption of the corresponding vehicle is likewise reduced.

One disadvantage of these tires resides in the relatively high resistivity of the tread material, which sometimes has the effect of generating said electromagnetic disturbances under certain weather conditions.

The object of the present invention is to propose a tire tread and a tire containing same, said tread, based on an electrically insulating material, being laterally defined by two sidewalls joining radially inner and outer faces, which make it possible, on passing from the said first section to the said second section, to minimize the energy of the electrostatic discharges of the tread of each tire and, therefore, to minimize the aforementioned electrostatic disturbances.

For that purpose, a tire tread according to the invention contains on its circumference at least one conductive layer appreciably joining the said sidewalls, said layer having a resistivity less than that of the said insulating material, which is provided on both sides of said layer or of each layer in said tread.

This tread structure, which is used for a set of tires equipping a vehicle with an installed radio receiver, makes it possible, notably, to reduce significantly the radio interference which can be detected in amplitude modulation, upon running over electrically conductive road elements under certain weather conditions.

According to a variant embodiment of the invention, the said conductive layer or each conductive layer appreciably joins the said sidewalls, so that it is interrupted opposite at least one of them.

According to another variant embodiment of the invention, the said conductive layer or each conductive layer appreciably joins the said sidewalls, so that it is interrupted opposite said radially inner and outer faces.

According to another characteristic of the invention, the said conductive layer or each conductive layer is roughly parallel to the said outer face.

According to another characteristic of the invention, the said tread contains a single conductive layer provided at a distance away from both of said inner and outer faces which is greater than or equal to one-quarter the thickness of said tread.

Said distance is preferably equal to half the thickness of said tread.

The resistivity of said conductive layer is preferably less than or equal to $10^8\ \Omega.cm$, the resistivity of the said insulating material being greater than or equal to $10^8\ \Omega.cm$.

According to one particular embodiment of the invention, the said tread further contains at least one conductive film, which is provided to connect the said inner and outer faces electrically.

The said tread then preferably contains two conductive films which are respectively provided on the locations of the said sidewalls.

In this embodiment, said films are also preferably extended respectively over said outer face by two electrically conductive circumferential peripheral bands.

According to a variant of this particular embodiment of the invention, the said tread contains between said sidewalls at least one electrically conductive film which connects said inner and outer faces together.

According to another variant of this particular embodiment of the invention, the said tread contains, on one side, at least one inner ribbon conductor connecting said conductive layer or each conductive layer to said radially inner face and, on the other, at least one outer rubber conductor connecting said conductive layer or each conductive layer to said radially outer face.

A tire according to the invention is designed to contain said tread according to the invention.

The aforesaid characteristics of the invention, as well as others, will be better understood by reading the following description of a working example of the invention, given by way of illustration and without limitation, said description relating to the attached drawings, among which:

Fig. 1 is a schematic view in radial section of a tread according to a first embodiment of the invention,

Fig. 2 is a schematic view in radial section of a tread according to a second embodiment of the invention,

Fig. 1a is a schematic view in radial section of a tread according to a first variant of said first embodiment of the invention,

Fig. 2a is a schematic view in radial section of a tread according to a first embodiment of said second embodiment of the invention,

Fig. 1b is a schematic view in radial section of a tread according to a second variant of said first embodiment of the invention,

Fig. 2b is a schematic view in radial section of a tread according to a second variant of said second embodiment of the invention,

Fig. 2c is a schematic view in radial section of a tread according to a third variant of said second embodiment of the invention,

Fig. 2d is a schematic view in radial section of a tread according to a fourth variant of said second embodiment of the invention, and

Figs. 3, 4 and 5 are test graphs illustrating the sound level of the radio interference in amplitude modulation which was detected under identical conditions on running with tires on conventional tread, on tread according to Fig. 1 and on tread according to Fig. 2.

The tread represented in Fig. 1 presents a roughly trapezoidal radial section solely for purposes of simplification. It is to be understood that any shape deemed appropriate, including tread patterns, could be presented for the type of tire chosen.

This tread 1 is defined by a radially inner face 2 intended to lie opposite the different reinforcements of a tire (not represented), by a radially outer face 3 intended to turn on contact with the ground, and by two sidewalls 4 and 5 connecting the two opposite pairs of lateral edges 6, 7 and 8, 9 of the said faces 2 and 3.

The tread 1 has an electrically insulating base, consisting, for example, of a nonconductive reinforcing filler, such as silica.

As can be seen in the example of Fig. 1, the tread 1 contains on its circumference a conductive layer 10 which appreciably joins the said sidewalls 4 and 5, so that the aforementioned insulating material is provided on both sides 11 and 12 of said layer 10.

In the example of Fig. 1, the tread 1 contains a single conductive layer 10 which is provided roughly parallel to the said outer face 3.

However, a tread 1 according to the invention could contain a plurality of such conductive layers 10, as long as said insulating material is provided on both sides of each layer 10.

More specifically, the conductive layer 10 in the example of Fig. 1 is situated at a distance away from either of the said inner and outer faces 2, 3 which is preferably greater than or equal to one-quarter the thickness of the tread 1.

As can be seen in this working example, said conductive layer 10 is even more preferably placed at equal distance from said inner and outer faces 2 and 3.

It will be observed that a conductive layer 10 according to the invention is characterized by a resistivity less than that of the zone 13 occupied by said insulating material in the tread 1.

By way of example, the resistivity of said conductive layer 10 is designed to be less than or equal to 10^8 Ω.cm, while the resistivity of said insulating material is intended to be greater than or equal to 10^8 Ω.cm.

The conductive layer 10 consists, for example, of an elastomer compound filled with carbon black, the carbon black content being determined by the resistivity sought.

According to a variant embodiment of that conductive layer 10, it can be obtained from a liquid solution which is applied on one of the parts 11, 12 of the tread 1, said solution comprising an electrically conductive compound and a dilution solvent.

Furthermore, said conductive layer 10 can have a variable thickness compared to that of the tread, advantageously ranging, for example, between 0.5 mm and 2.5 mm, for a total thickness of tread 1 averaging around 1.2 cm.

Tests were conducted with tires, each containing a tread 1 of the type illustrated in Fig. 1.

They revealed, inside a vehicle equipped with a radio receiver operating on amplitude modulation and tested while traveling on a road containing metal sections, such as manhole covers and/or metal bridge joints, a significant reduction of the electrostatic discharge on entering those sections and, consequently, of the radio interference which can be detected under certain weather conditions.

This results in a notable improvement in listening convenience for passengers.

Fig. 2 illustrates a second embodiment of the tread 1 of Fig. 1, the elements of same identically repeated there being respectively identified by numerical references increased by 100.

A tread 101 according to Fig. 2 is distinguished from said tread 1 in that it further contains at least one radial conductive film 114 which is provided to make an electric connection of the outer face 103 to the inner face 102 of the said tread 101.

In the working example of Fig. 2, it can be seen that the tread 101 contains two conductive films 114 which are respectively provided on the locations of the sidewalls 104 and 105 of said tread 101 and which are preferably extended respectively over said outer face 103 by two circumferential peripheral bands 115, likewise conductive and of variable width.

It is to be noted that the conductive films 114 can have a thickness different from that of the said conductive layer 110.

As for the resistivity of said films 114, it is preferably roughly equal to that of said layer 110 in this working example.

Tests were also conducted with tires each containing a tread 101 of this type, thus revealing a significant reduction of the electrostatic discharge on entering the aforementioned sections referred to in the working example of Fig. 1 and also a significant reduction of the possible radio interference resulting therefrom.

With reference to the working examples just described, it is to be observed that the treads 1, 101 according to the invention further reduce the hysteresis losses of the tires incorporating them during travel, in the same way as a tread with the same insulating material base including a low-hysteresis reinforcing filler such as silica.

It is to be further noted that the axial conductive layers 10, 110 according to Figs. 1 and 2 do not, in practice, each present a strictly linear radial section like the one schematically represented, but a more of less irregular section resulting from the pressure stresses inherent to molding of the tire. Each conductive layer 10, 110 could, for example, present a radial section that is appreciably rippled or in the form of broken

lines, provided that it extends between the said sidewalls 4, 104 and 5, 105 and over the entire circumference of the tire incorporating it.

Figs. 1a and 1b, on the one hand, and Figs. 2b, 2c and 2d, on the other, illustrate variant embodiments of the treads represented in Figs. 1 and 2 respectively, the elements of those in Figs. 1a, 1b, 2b, 2c and 2d which fulfill functions similar to those of the elements in Figs. 1 and 2 being identified by the same numerical references.

The treads 1 of Figs. 1a and 1b, like that of Fig. 1, are also so designed that the conductive layer 10 each of them contains appreciably connects the said sidewalls 4 and 5.

More specifically, the layer 10 of Fig. 1a is interrupted opposite each of the sidewalls 4 and 5 of the tread 1, that is, each of the lateral edges 10a, 10b of said layer 10 is away from the opposite sidewall 4 or 5.

Without limitation, each edge 10a, 10b can be separated from the opposite sidewall 4 or 5 by a distance equal, for example, to 5% of the width of the tread 1 on the site of said layer 10.

It is to be noted that in such a layer 10 according to that variant embodiment only one of its lateral edges 10a or 10b might be distant from the opposite sidewall 4 or 5.

As for the layer 10 of Fig. 1b, it differs from that of Fig. 1a in that it is further interrupted opposite the said inner and outer faces 2 and 3 of the tread 1, that is, between its edges 10a and 10b it presents a plurality of interruptions 10c in the form of circumferential grooves.

The treads 101 of Figs. 2a to 2d, like that of Fig. 2, are also so designed that the conductive layer 110 each of them contains appreciably joins the said sidewalls 104 and

105. It is to be understood that a tread 101 according to one of those Figs. 2a to 2d could, for example, be so designed that the conductive layer 110 it contains responds to the aforementioned description relating to Figs. 1a and 1b.

More specifically, the tread 101 of Fig. 2a differs from that of Fig. 2 in that between its sidewalls 104 and 105, instead of the said films 114, it contains two conductive films 114' which electrically connect the inner and outer faces 102 and 103 of the said tread 101.

Those two films 114' are in this example symmetrical to each other in relation to the circumferential median plane P of that tread 101.

It is to be noted that a tread 101 according to this variant embodiment could contain more than two conductive films 114' and that each film 114' could have a given inclination other than that represented in Fig. 2a in relation to the said circumferential median plane P.

As for the tread 101 of Fig. 2c, it differs from that of Fig. 2a, in that between its sidewalls 104 and 105 it contains a single conductive film 114' joining the said faces 102 and 103, provided in that example on the site of said median plane P.

The tread 101 of Fig. 2b differs from that of Fig. 2, in that it contains, on one side, two inner ribbon conductors 114a which are respectively provided on the sites of said sidewalls 104 and 105 and connect said conductive layer 110 to said inner face 102 and, on the other, an outer ribbon conductor 114b which is provided between the said sidewalls 104 and 105 and connects said layer 110 to said outer face 105 *[sic]*.

In the example of Fig. 2b, said outer ribbon conductor 114b is provided on the site of said circumferential median plane P.

It is to be noted, however, that a tread 101 according to that variant embodiment could contain one or more outer ribbon conductors 114b, each capable of having a geometry and an inclination different from said plane P, provided that it connects said layer 110 to said outer face 105 *[sic]*.

As for the tread 101 of Fig. 2d, it also contains an outer ribbon conductor 114b like that of Fig. 2b, but it differs from that of Fig. 2b in that it contains only one inner ribbon conductor 114 connecting said inner face 102 to said conductive layer 110, said inner ribbon conductor 114a being provided between the said sidewalls 104 and 105.

It is to be noted that those films 114' and those ribbon conductors 114a and 114b can have a thickness different from that of said conductive layer or of each conductive layer 110.

As for the resistivity of said films 114' and said ribbon conductors 114a and 114b, it is preferably roughly equal to that of said layer 110 in those variant embodiments.

Here is an account of the tests performed, on the one hand, on a first set of tires with tread 1 according to Fig. 1 and, on the other, on a second set of tires with tread 101 according to Fig. 2. Those tests were conducted in comparison with a "control" set of tires, characterized by an insulating tread, of resistivity greater than or equal to 10^{13} Ω.cm.

Those tests consisted of quantifying the radio interference detected in amplitude modulation, on travel of a test vehicle successively fitted with those sets of tires, by amplification and analysis of the corresponding signals recorded on a loudspeaker.

Those tests were conducted under the same weather conditions (temperature 17^0C, outdoor humidity level 18%, outdoor dew point temperature -7^oC) and under the

same running conditions (road sections containing manhole covers, running speed 70 km/h).

Furthermore, a frequency of 1386 kHz was used for the radio receiver installed on the test vehicle, corresponding to amplitude modulation, with the same amplification of the signal emitted by the radio receiver in all the tests.

The tires of each of the sets tested had a tread approximately 1.2 cm thick. As for the tires with tread 1, 101 according to the invention, belonging to the first and second sets, each axial conductive layer 10, 110 had a thickness of 0.5 mm and a resistivity roughly equal to 10^3 Ω.cm.

With regard to the tread 101 of the tires of said second set, both radial conductive layers 114 had, for example, a thickness of 0.5 mm and a resistivity also less than or equal to 10^3 Ω.cm.

As for the resistivity of the said insulating material of each tread 1, 101, it was made equal to that of each tread of the said "control" set, that is, greater than or equal to 10^{13} Ω.cm.

The test results are illustrated by the graphs of Figs. 3, 4 and 5, which refer respectively to the said "control" set, to said first set and to said second set of tires and which represent averages, over several runs, of the potential of the signal recorded in amplitude modulation (expressed in V) as a function of time (expressed in ms).

It can be seen in Fig. 3 that, for the "control" set of tires, running of the vehicle on metal elements generates on the loudspeaker mean interference values of relatively high amplitudes (1.62 V and 1.79 V respectively for the pairs of front and rear tires).

Those mean potential values, called "V_{ms}" by the expert, are calculated by discrete quadratic mean on an acquisition time window.

As can be seen in Fig. 4, the first set of tires according to the invention generates mean interference values V_{ms}, the amplitudes of which are very appreciably reduced relative to the said "control" set (0.66 V and 0.72 V) for the pairs of front and rear tires respectively, the reduction being approximately 60%).

As can be seen in Fig. 5, the second set of tires according to the invention generates mean interference values V_{ms}, the amplitudes of which are further reduced relative to said first set (0.16 V and 0.21 V) for the pairs of front and rear tires respectively, the reduction being approximately 90%).

As can be seen in Figs. 4 and 5, it is to be noted that the duration of each interference relative to said first and second sets of tires is also considerably reduced, compared to the "control" set.

In conclusion, the result of these tests is a listening convenience satisfactory to the passenger or passengers of a vehicle equipped with tires according to the invention.

CLAIMS

1) Tire tread (1, 101), laterally defined by two sidewalls (4, 104 and 5, 105) joining radially inner and outer faces (2, 102 and 3, 103), said tread (1, 101) having a base of an electrically insulating material, characterized in that it contains on its circumference at least one conductive layer (10, 110) appreciably joining the said sidewalls (4, 104 and 5, 105), said layer (10, 110) having a resistivity less than that of said insulating material, which is radially provided on both sides (11, 111 and 12, 112) of said layer (10, 110) in said tread (1, 101).

2) Tread (1) according to Claim 1, characterized in that the said conductive layer (10) or each conductive layer appreciably joins the said sidewalls (4 and 5), so that it is interrupted opposite at least one of them. *[illegible handwriting]*

3) Tread (1) according to Claim 1 or 2, characterized in that the said conductive layer or each conductive layer (10) appreciably joins the said sidewalls (4 and 5), so that it is interrupted opposite said radially inner and outer faces (2 and 3).

4) Tread (1, 101) according to one of the foregoing claims, characterized in that the said conductive layer or each conductive layer (10, 110) is roughly parallel to the said outer face (3, 103).

5) Tread (1, 101) according to one of the foregoing claims, characterized in that it contains a single conductive layer (10, 110) provided at a distance away from both of said inner and outer faces (2, 102 and 3, 103) which is greater than or equal to one-quarter the thickness of said tread (1, 101).

6) Tread (1, 101) according to Claim 5, characterized in that said distance is equal to half the thickness of said tread (1, 101).

7) Tread (1, 101) according to one of the foregoing claims, characterized in that the resistivity of said conductive layer (10, 110) is less than or equal to $10^8\ \Omega.cm$, the resistivity of the said insulating material being greater than or equal to $10^8\ \Omega.cm$.

8) Tread (101) according to one of the foregoing claims, characterized in that it contains at least one conductive film (114), which is provided to connect the said inner and outer faces (102, 103) electrically.

9) Tread (101) according to Claim 8, characterized in that it contains two conductive films (114) which are respectively provided on the locations of the said sidewalls (104 and 105).

10) Tread (101) according to Claim 9, characterized in that said films (114) are extended respectively over said outer face (103) by two electrically conductive circumferential peripheral bands (115).

11) Tread (101) according to Claim 8, characterized in that it contains between said sidewalls (104 and 105) at least one electrically conductive film (114') which connects said inner and outer faces (102 and 103) together.

12) Tread (101) according to Claim 8, characterized in that it contains, on one side, at least one inner ribbon conductor connecting said conductive layer (110) or each conductive layer to said radially inner face (102) and, on the other, at least one outer rubber conductor connecting said conductive layer or each conductive layer (110) to said radially outer face (103).

13) Tire, characterized in that it contains a tread (1, 101) according to one of the foregoing claims.

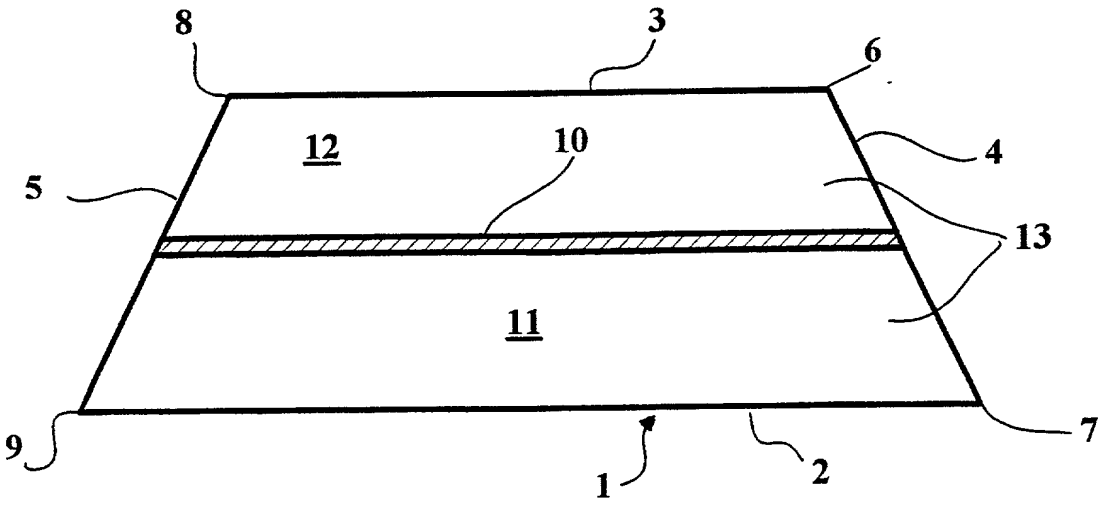
8
3
6
12
10
4
5
13
11
9
7
1
2

FIG. 1

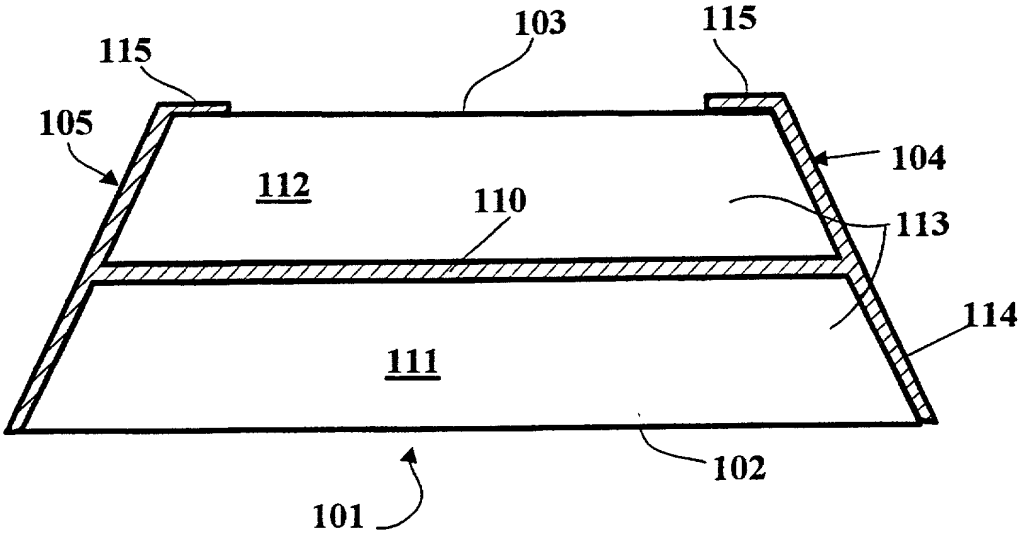
103
115
115
105
104
112
110
113
114
111
102
101

FIG. 2

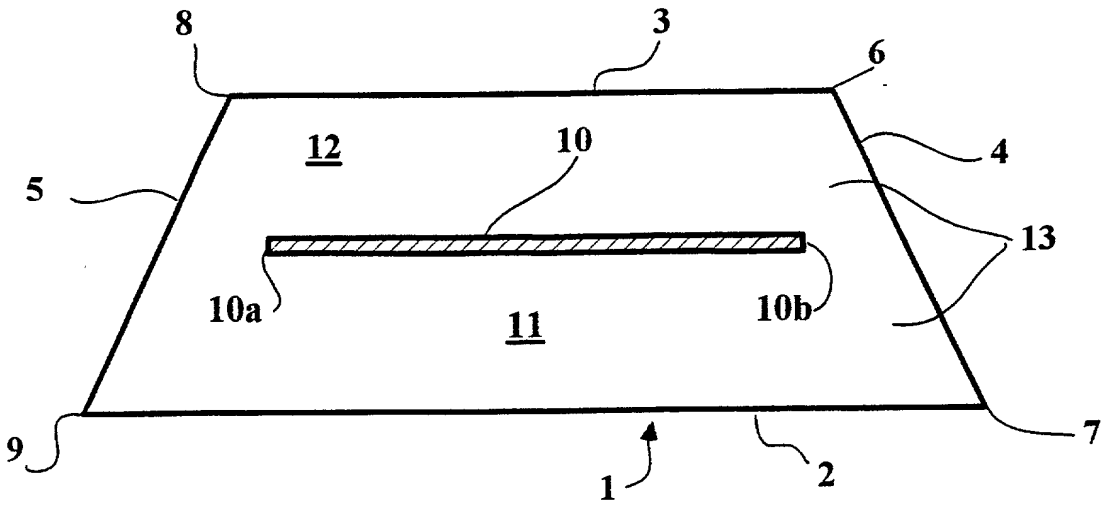
8
3
6
12
10
4
5
13
10a
10b
11
9
7
1
2

FIG. 1a

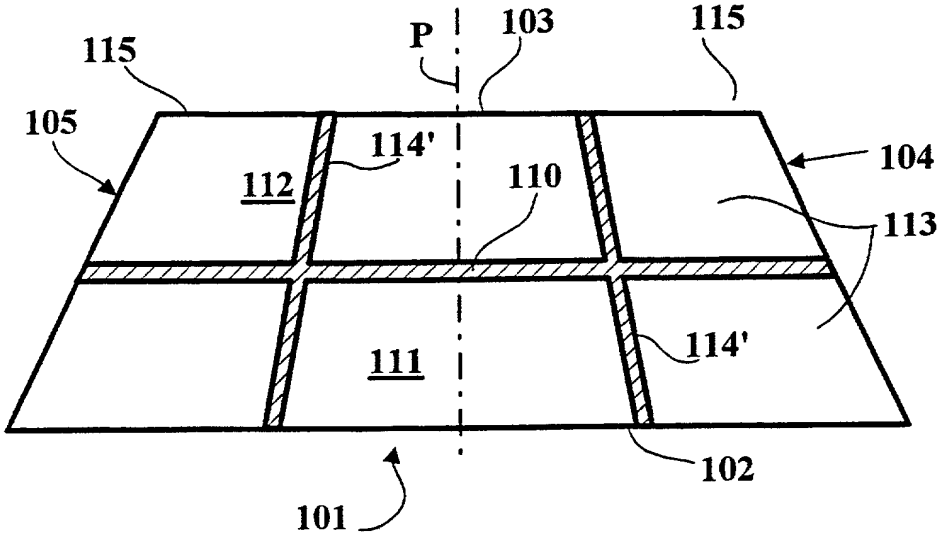
P
103
115
115
105
114'
104
112
110
113
114'
111
102
101

FIG. 2a

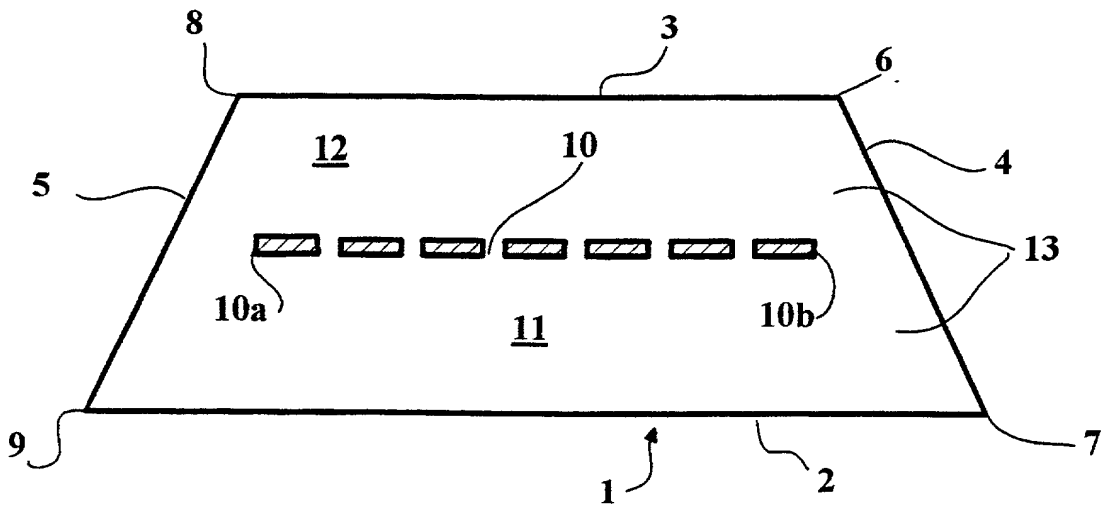
8
3
6
12
10
4
5
13
10a
10b
11
9
7
1
2

FIG. 1b

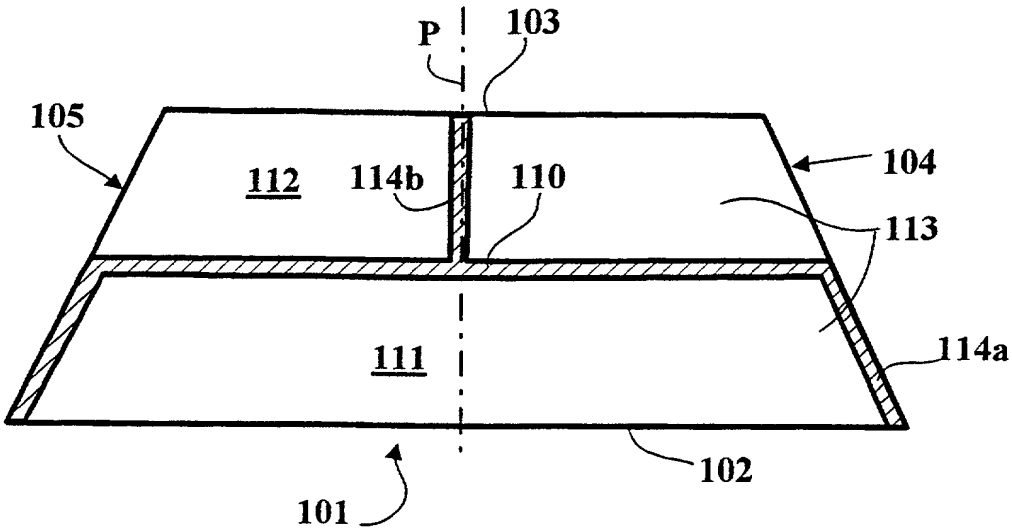
P
103
105
104
112
114b
110
113
111
114a
102
101

FIG. 2b

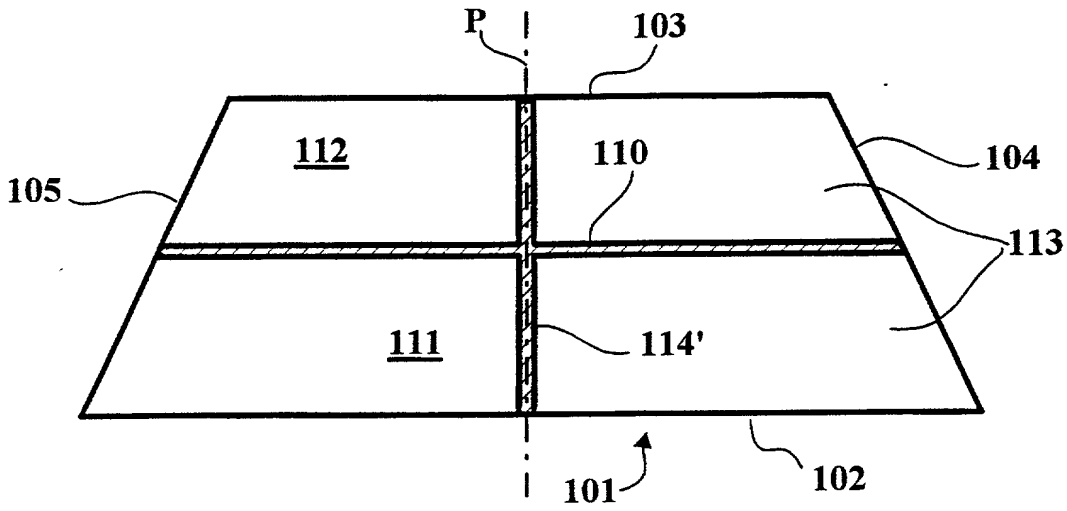
P
103
112
110
104
105
113
111
114'
101
102

FIG. 2c

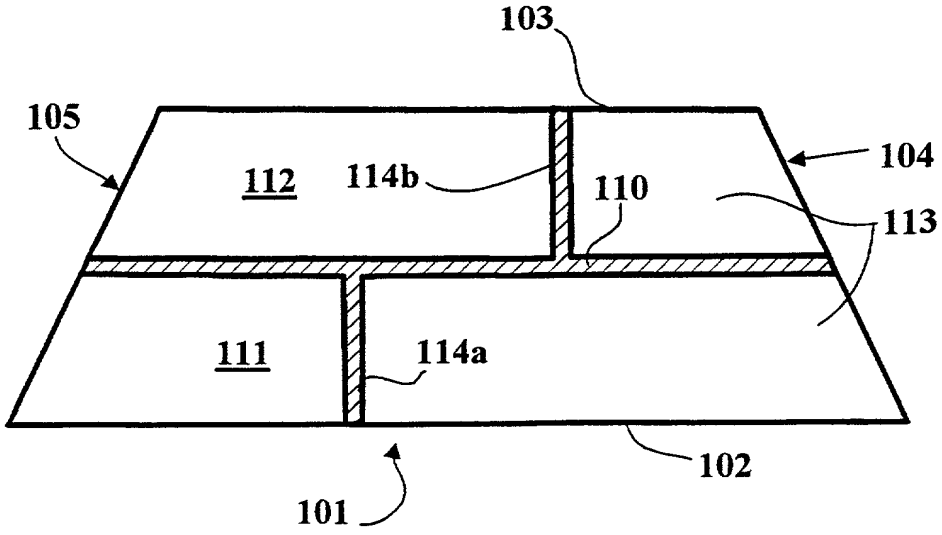
103
105
104
112
114b
110
113
111
114a
102
101

FIG. 2d

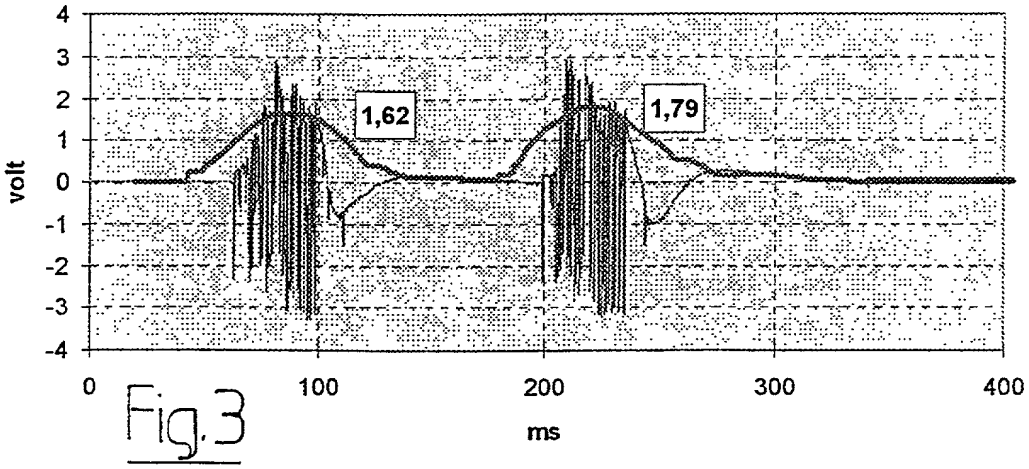

Fig.3

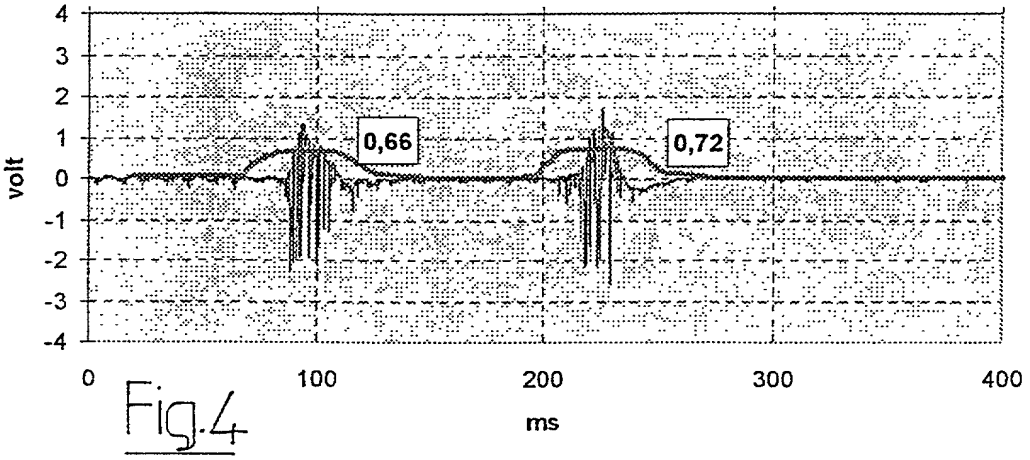

Fig.4

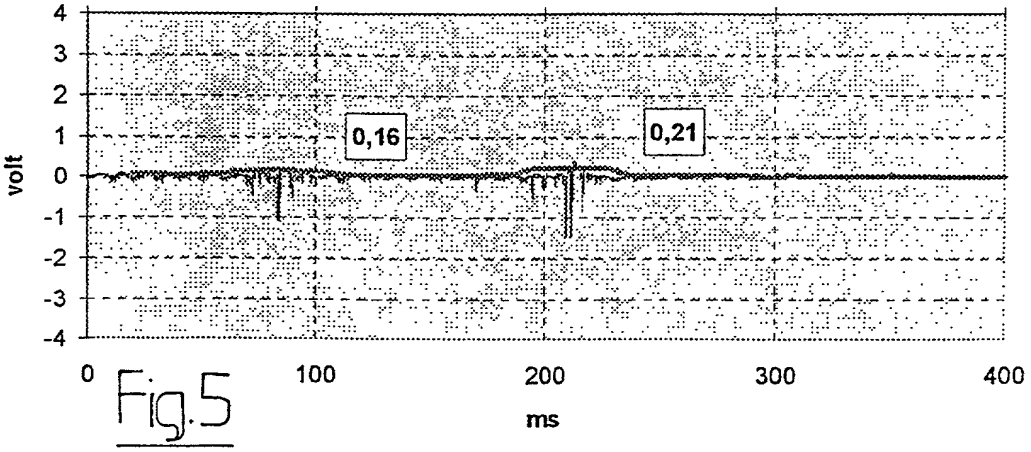

Fig.5

Declaration and Power of Attorney for Patent Application

Déclaration et Pouvoirs pour Demande de Brevet

French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par ie présent acte que:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

RUNNING TREAD FOR TIRE AND TIRE COMPRISING SAME

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

RUNNING TREAD FOR TIRE AND TIRE COMPRISING SAME

Cette déclaration est du type suivant:

This declaration is of the following type:

original	[ ]	**original**
modèle	[ ]	**design**
phase nationale du PCT	[✓]	**national stage of PCT.**
divisionnaire	[ ]	**divisional**
continuation	[ ]	**continuation**
continuation en parties (C-E-P)	[ ]	**continuation-in-part (C-I-P)**

et dont la description est fournie ci-joint à moins que la case suivante n'ait été cochée:

[✓] **a été déposée le** August 16, 2001 **sous le numéro de demande des Etats-Unis ou le numéro de demande international PCT** 09/913,744 **et modifiée le** _____ **(le cas échéant).**

the specification of which is attached hereto unless the following box is checked:

[✓] **was filed on** August 16, 2001 **as United States Application Number or PCT International Application Number** 09/913,744 **and was amended on** _____ **(if applicable).**

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

[ ] **Conformément aux termes de cette obligation, les informations exigeès sont jointes 37 CFR 1.98 aux présentes.**

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

[ ] **In compliance with this duty there is attached an information disclosure statement. 37 CFR 1.98.**

French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365 (b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior foreign application(s) Demande(s) de brevet antérieure(s)			Priority Claimed Droit de priorité revendiqué
98/14113	France	9 November 1998	
(Number) (Numéro)	(Country) (Pays)	(Day/Month/Year Filed) (Jour/Mois/Année de dépôt	[✓]
			[ ]
(Number) (Numéro)	(Country) (Pays)	(Day/Month/Year Filed) (Jour/Mois/Année de dépôt	

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application (N° de demande)	(Filing Date) (Date de dépôt)
(Application (N° de demande)	(Filing Date) (Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la bevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande:

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Application (N° de demande)	(Filing Date) (Date de dépôt)	(Status) (patented, pending, abandoned) (Statut) (breveté, en cours d'examen, abandonné)
(Application (N° de demande)	(Filing Date) (Date de dépôt)	(Status) (patented, pending, abandoned) (Statut) (breveté, en cours d'examen, abandonné)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

French Language Declaration

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour q'uils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec l'Office des brevets et des marques: *(mentionner le nom et le numéro d'enregistrement).*

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: *(list name and registration number)*

All attorneys and agents recorded for U.S. Patent and Trademark Office Customer Number 21003.

Send Correspondence to:
Adresser toute correspondance à:
Baker Botts L.L.P.
30 Rockefeller Plaza
New York, New York 10112

Direct Telephone Calls to:
Adresser tout appel téléphonique à:
(nom et numéro de téléphone)
Baker Botts L.L.P.
212-408-2500

Full name of sole or first inventor Nom complet de l'unique ou premier inventeur	Full name of second joint inventor, if any Nom complet de second co-inventeur, le case échéant
VALERY POULBOT	
Inventor's signature Signature de l'inventeur — Date	Inventor's signature Signature de l'inventeur — Date
Residence ~~Randan~~, France Domicile	Residence Domicile
Citizenship Nationalité France	Citizenship Nationalité
Post Office Address Adresse postale ~~12, rue Adelaide d'Orleans, F-63310 Randan, France~~ 21 rue du Creux des Mets 63430 Les Martres d'Artière France	Post Office Address Adresse postale

(Fournir les mêmes renseignements et la signature de tout co-inventeur supplémentaire.)

(Supply similar information and signature for third and subsequent joint inventors.)